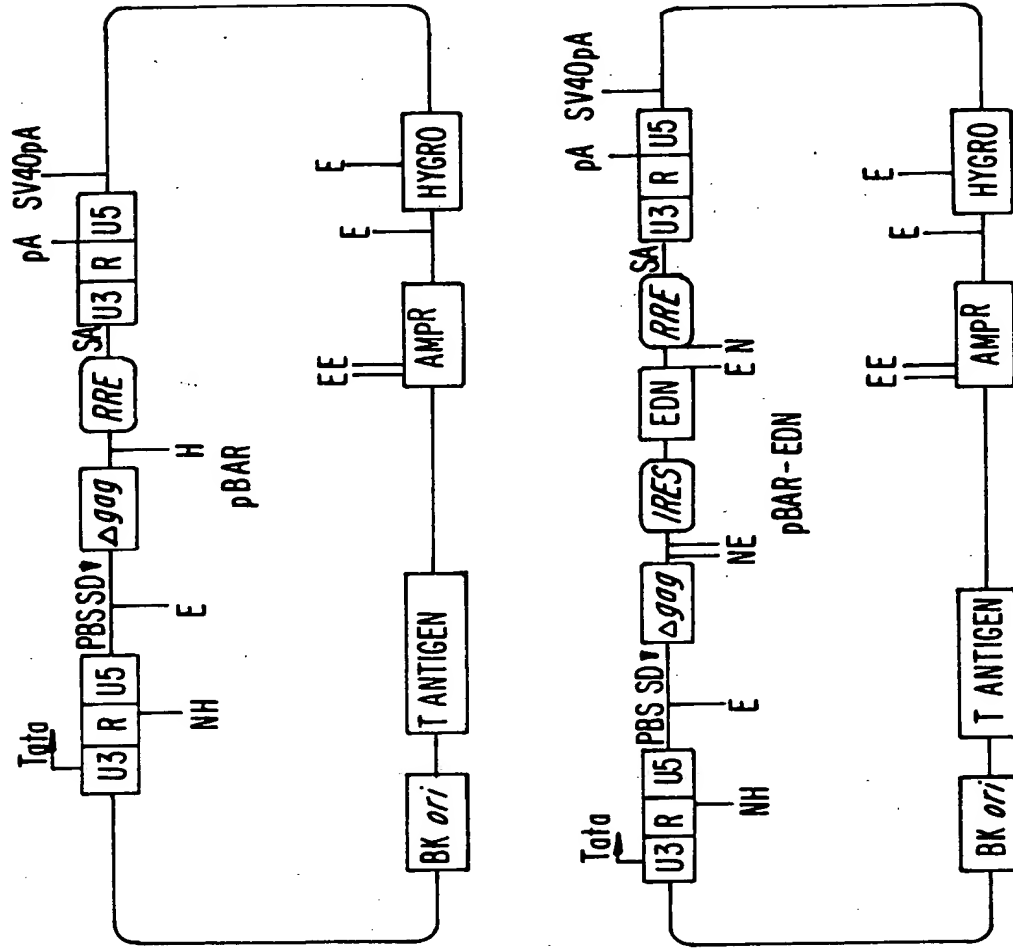


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Tot RESPONSIVE ELEMENT

Rev RESPONSIVE ELEMENT

SA/SD PREVENTS PROTEIN EXPRESSION FROM BASAL PROMOTER ACTIVITY

PACKAGING SIGNAL

PRIMER BINDING SITE

DIFFERENT 5' AND 3' LTR WITH A UNIQUE RESTRICTION SITE AT THE 5' LTR

IRES SEQUENCE FOR TRANSLATION OF TWO PROTEINS FROM A DICISTRONIC mRNA

TWO PROTECTIVE GENES ARE ACTIVE AT DIFFERENT STAGES OF VIRAL REPLICATION

EPISOMAL REPLICATION

SV40pA TO BLOCK ACTIVITY FROM THE 3' LTR

FIG. 1.



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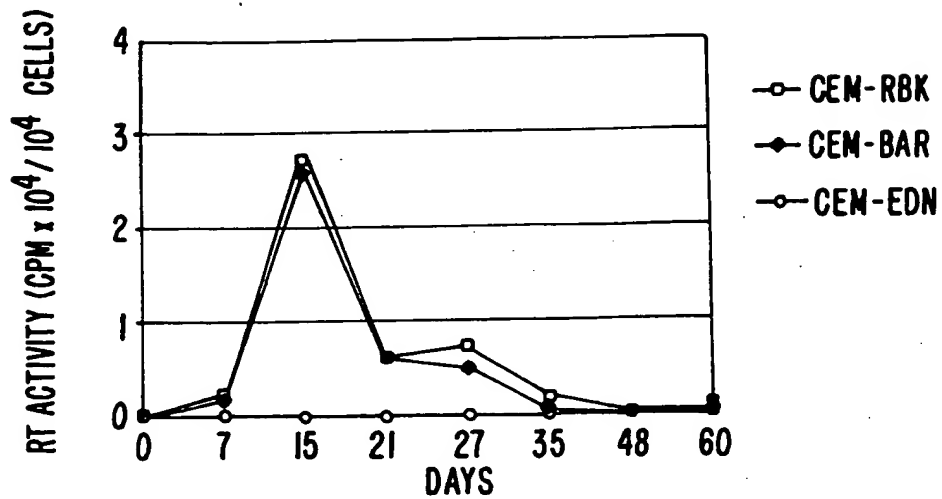


FIG. 2A.

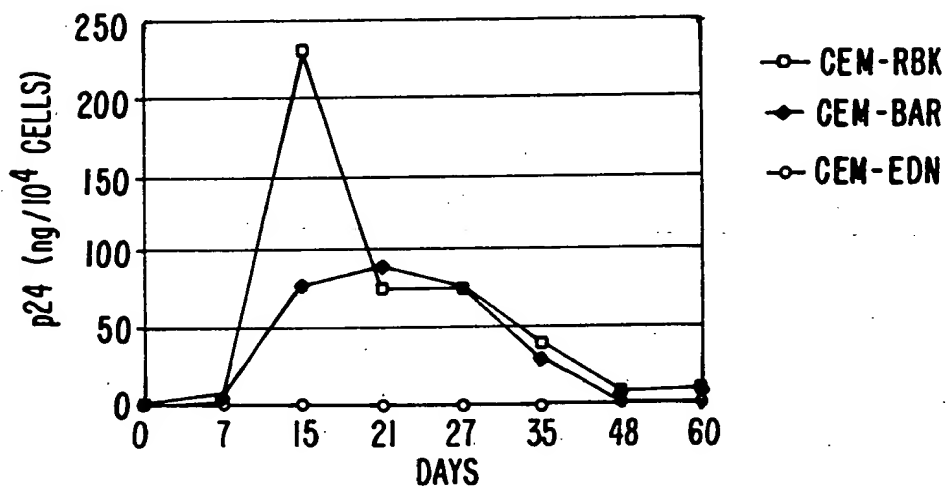


FIG. 2B.

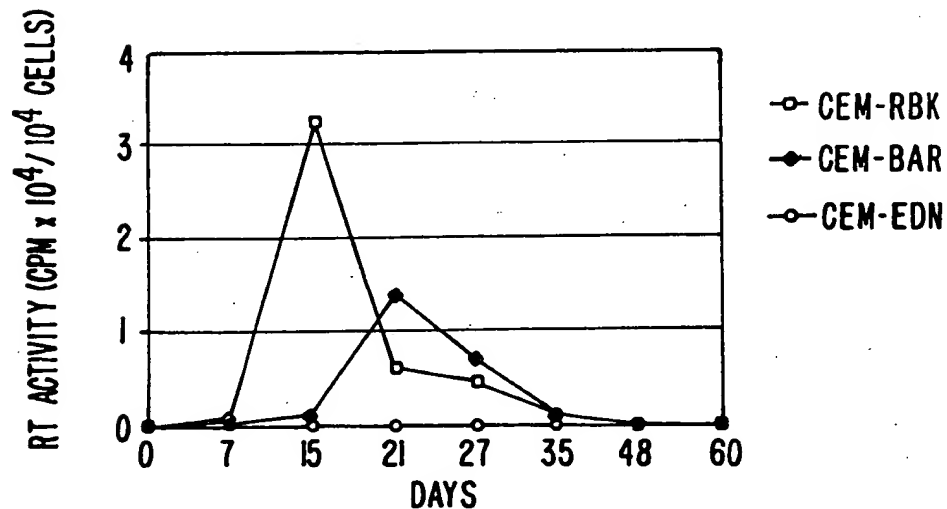


FIG. 2C.



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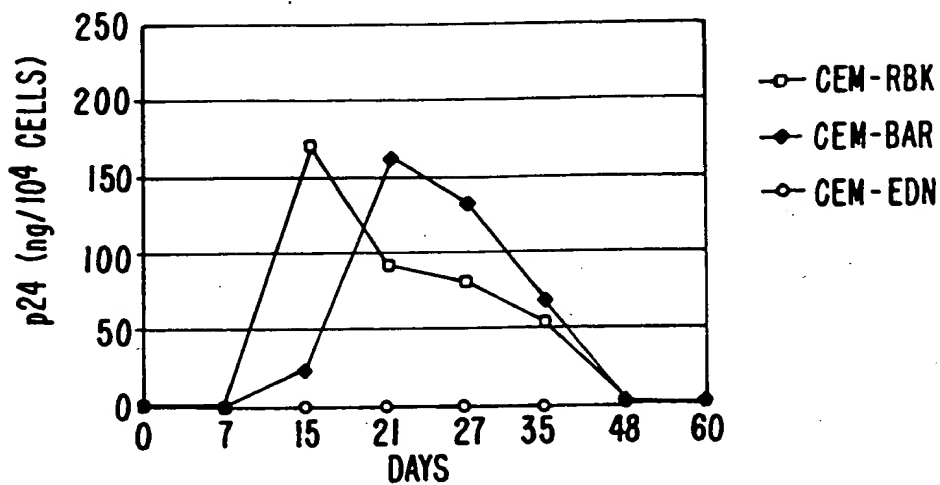


FIG. 2D.

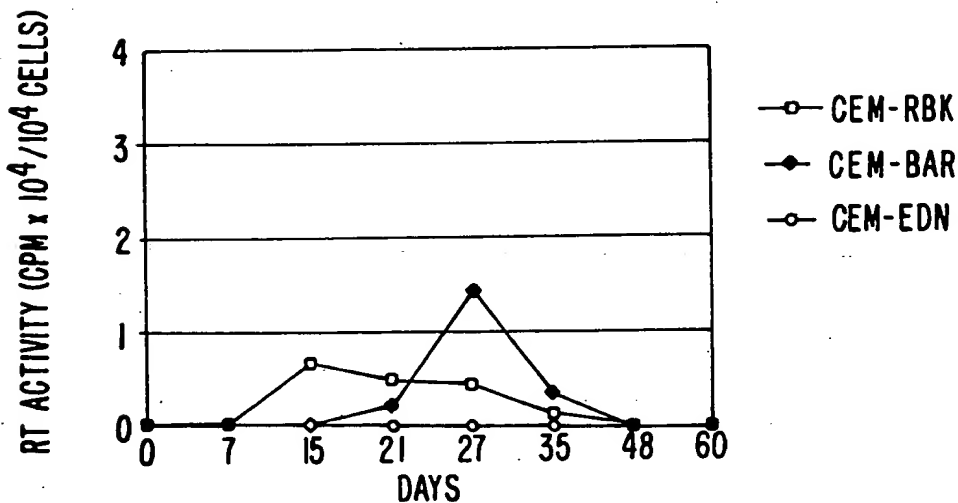


FIG. 2E.

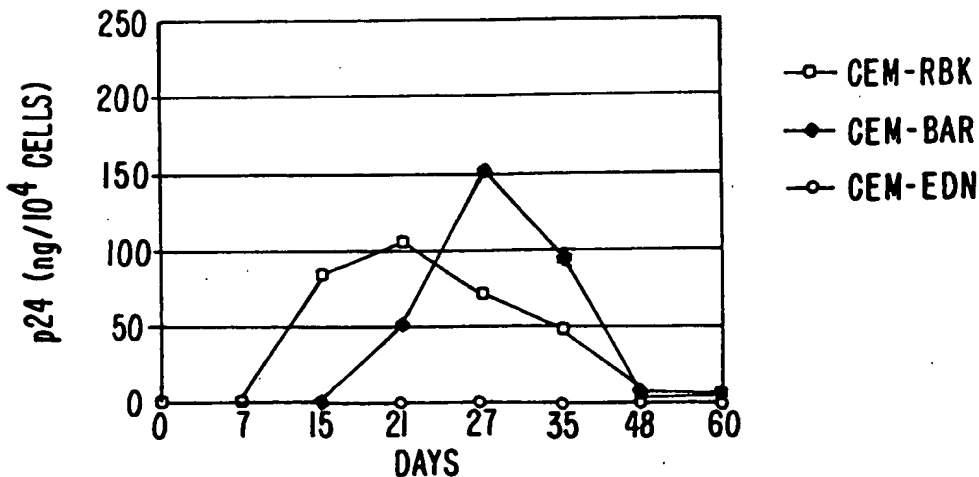


FIG. 2F.



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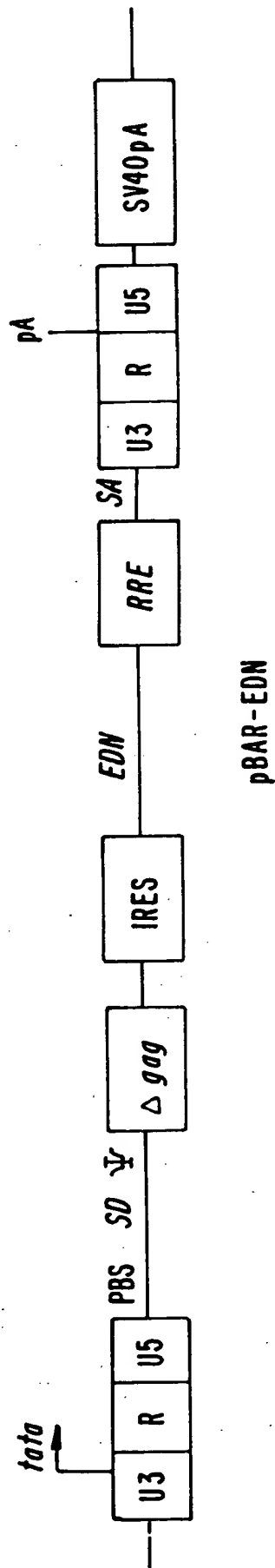
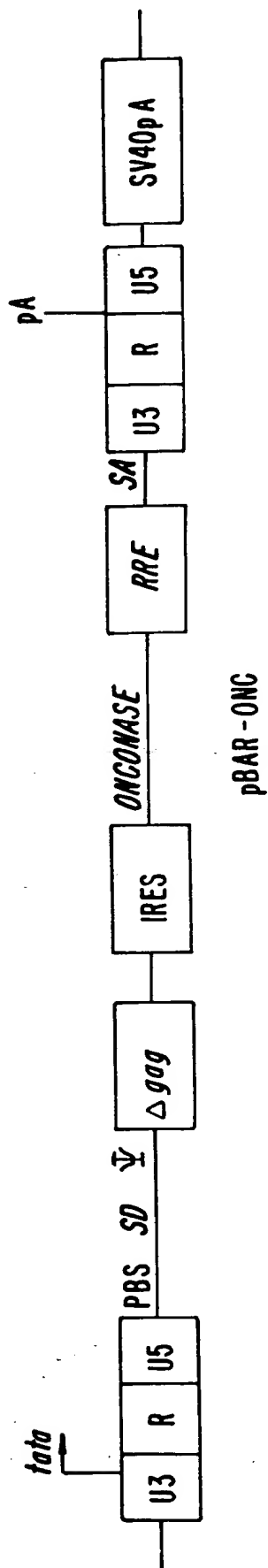
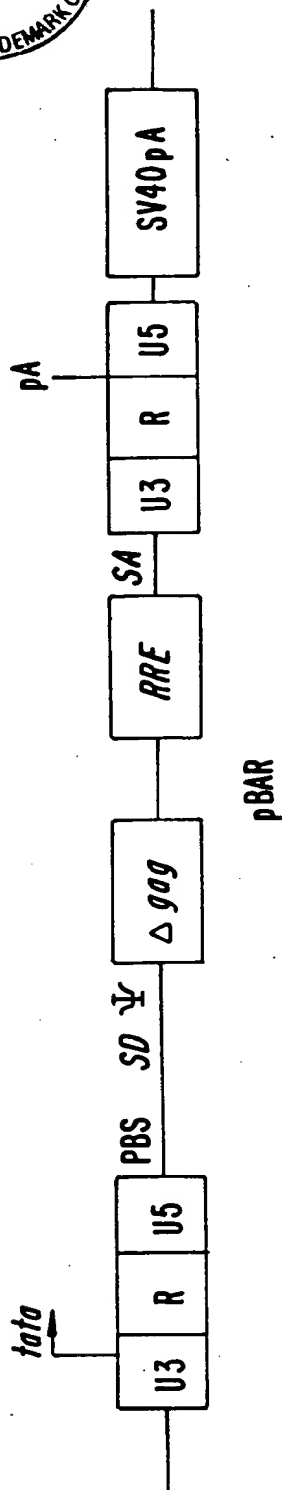
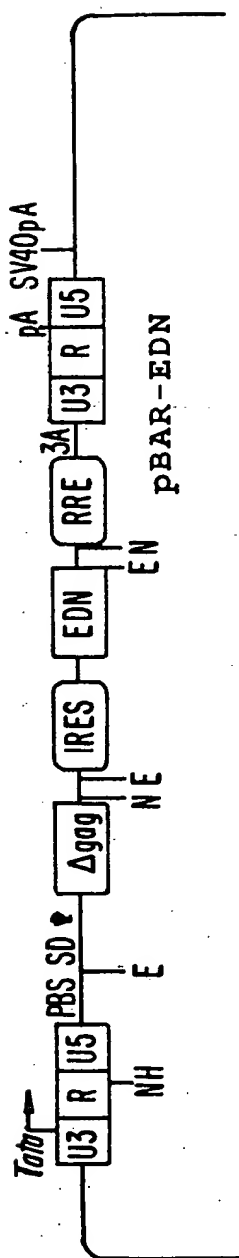


FIG. 3.



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IRES

ATTCCCCC TCTCCCTCCC CCCCCCTTAA CGTTACTGGC CGAAGCCGCT 50
TGAATAAGG CCGGTGTGCG TTGTCTATAT GTTATTTTCC ACCATATTGC 100
CGTCTTTTGG CAATGTGAGG GCCCGGAAC CTGGCCCTGT CTTCTTGACG 150
AGCATTCCTA GGGTCTTTC CCTCTCGCC AAAGGAATGC AAGTCTGTT 200
GAATGTCGTG AAGGAAGCAG TTCCTCTGGA YYCTTCTTGA AGACAAACAA 250
CGTCTGTAGC GACCCCTTTC AGGCAGCGGA ACCCCCCACC TGGCGACAGG 300
TGCCCTCTGCG YYCAAAGCC ACGTGTATAA GATACAGGTG CAAAGGCGCC 350
ACAACCCAG TGCCACGTTG TGAGTTGGAT AGTTGTGGAA AGAGTCAAAT 400
GGCTCTCCTC AAGCGTATTC AACAAAGGCG TGAAGGATGC CCAGAAGGTA 450
CCCCATTGTA TGGGATCTGA TTTGGCCCT CCGTGACAT GCTTTACATG 500
TGTTTAGTCG AGGTTAAAAA ACGTCTAGGC CCCCCGAACC ACGGGGACGA 550
GGTTTTTCCT TTGAAAAACA CGATGATAAG CTTGCCAC 588

INTERVENING SEQUENCE

CTAGAAATAATTTTGTTAACTTTAAGAGGAGATATACATATG

EDN

AAA CCG CCG CAG TTC ACT TGG GCT CAG TGG TTC GAA ACT CAG CAT ATC AAC AAC ACT ATG ACT TCT 60
CAG CAG TGC ACT AAC GCT ATG CAG GTT ATC AAC AAC TAC CAG CAG CGT CGT TGC AAA AAC CAG 120
AAC ACT TTC CTG CTG ACT ACT TTC GCT AAC GTT AAC GTT AAC CCG AAC ATG 180
ACT TGC CCG TCT AAC AAA ACT CGT AAA AAC TGC CAT CAT TCT TCT TCT CCG CTG 240
ATC CAT TGC AAC CTG ACT ACT CCG TCT CCG CAG AAC ATC TCT AAC TGC CGT TAC GCT CAG 300
ACT CCG GCT AAC ATG TTC TAC ATC GTT GCT TGC GAC AAC CAG CGT GAC CCG 360
CCG CAG TAC CCG GTT GCT CCG CTT CAT CTG GAC CGT ATC ATC 402

FIG. 4.

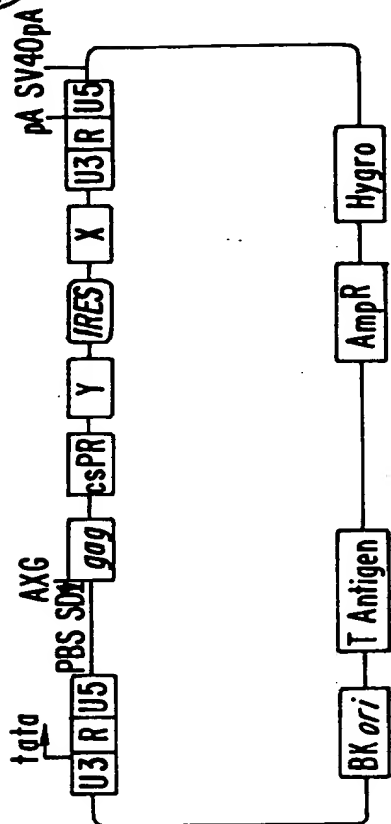


FIG. 5A.

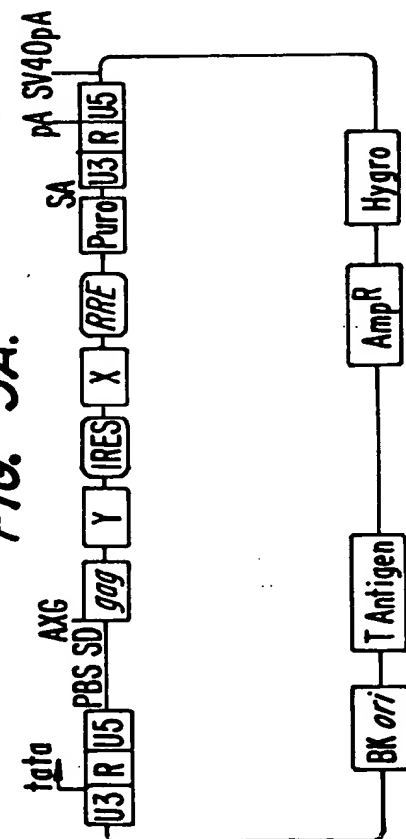


FIG. 5B.

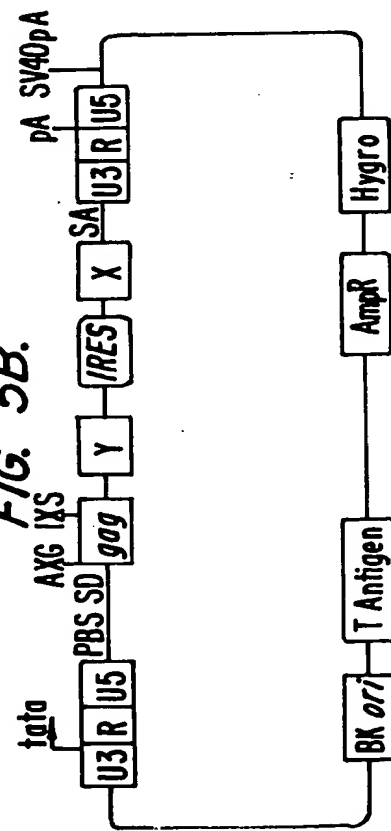


FIG. 5C.

FIG. 5D.

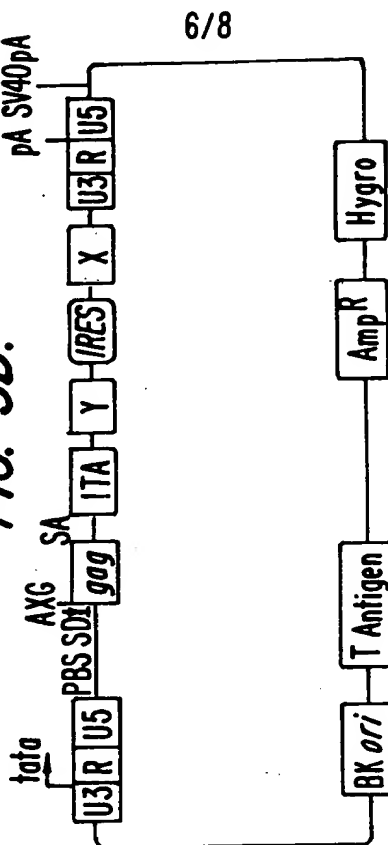


FIG. 5E.

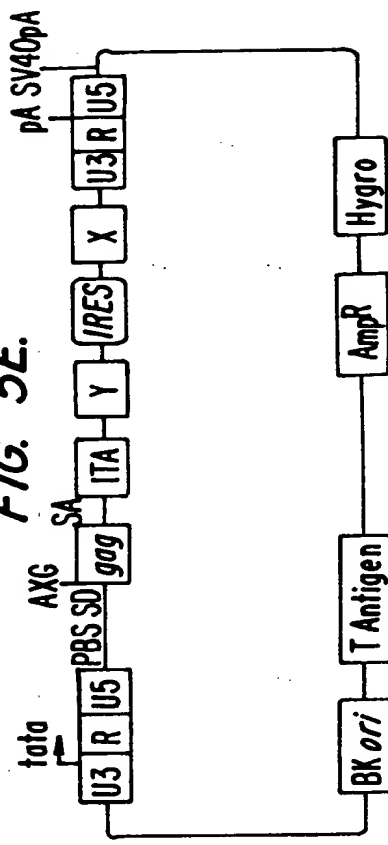


FIG. 5F.



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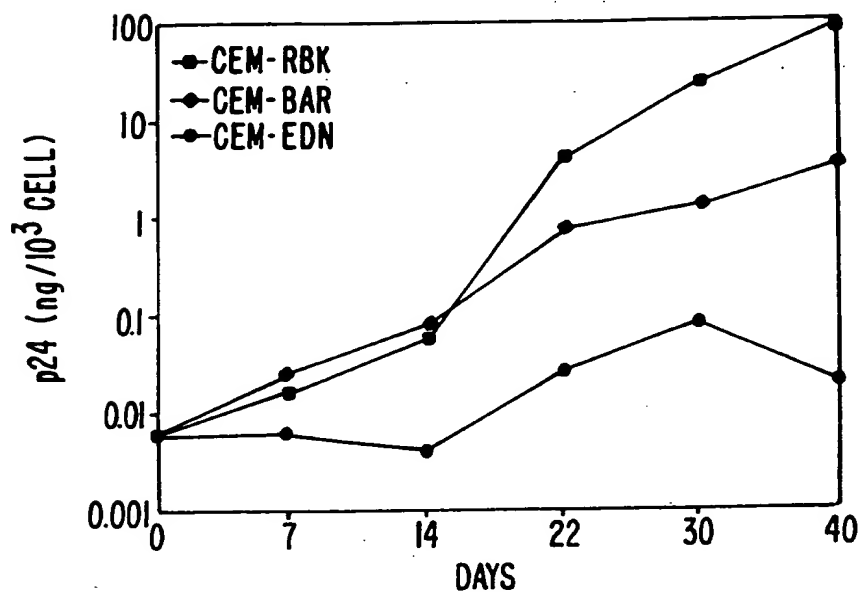


FIG. 6A.

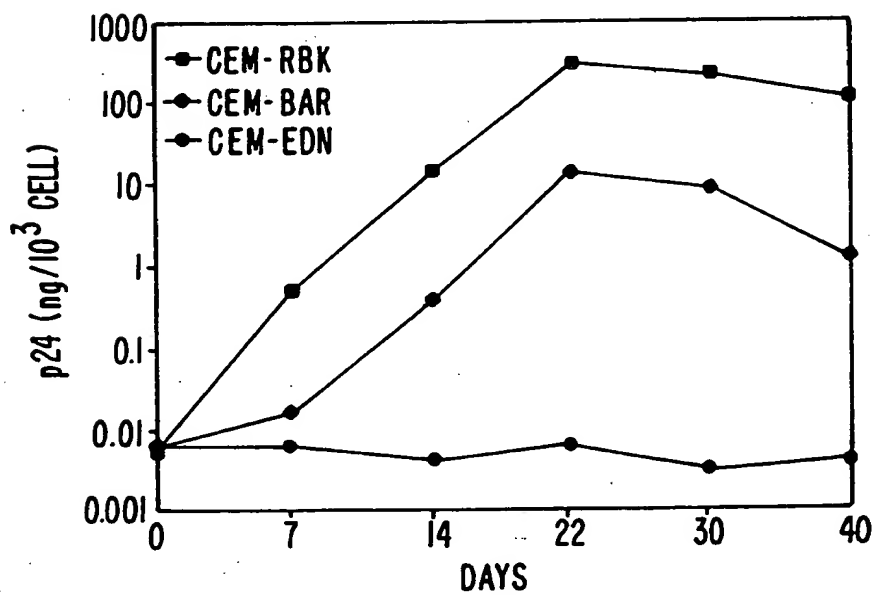


FIG. 6B.

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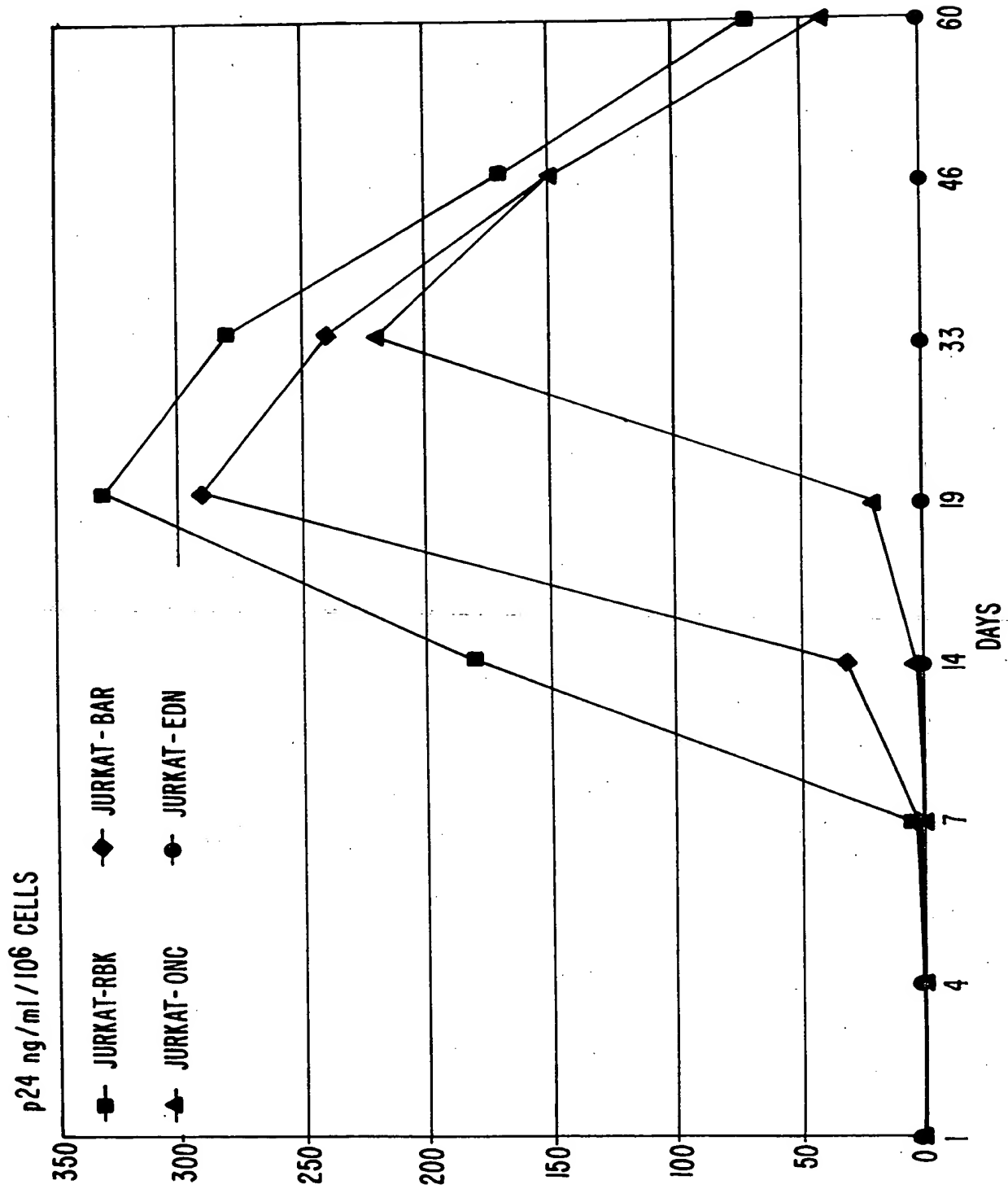


FIG. 7.